Supporting Material

Synergistic effect between Cu-Cr bimetallic oxides supported on g-C_3N_4 for the selective oxidation of toluene to benzaldehyde

Cai Xu, Xiaozhong Wang *, Yingqi Chen and Liyan Dai *

Zhejiang Provincial Key Laboratory of Advanced Chemical Engineering Manufacture Technology, College of Chemical and Biological Engineering, Zhejiang University, Hangzhou 310027, China

*Corresponding authors.

(X. Wang) E-mail: wangxiaozhong@zju.edu.cn.

(L. Dai) E-mail: dailiyan@zju.edu.cn; Tel: +86 571 87952693; Fax: +86 571 87953294.

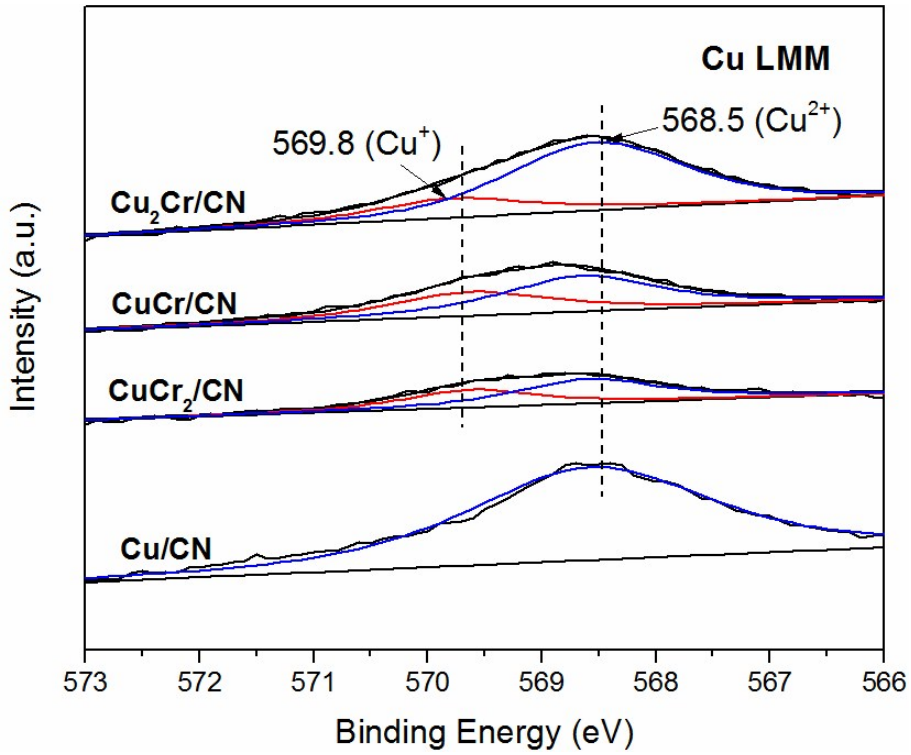

Fig. S1 Auger spectra of Cu LMM of the prepared catalysts.

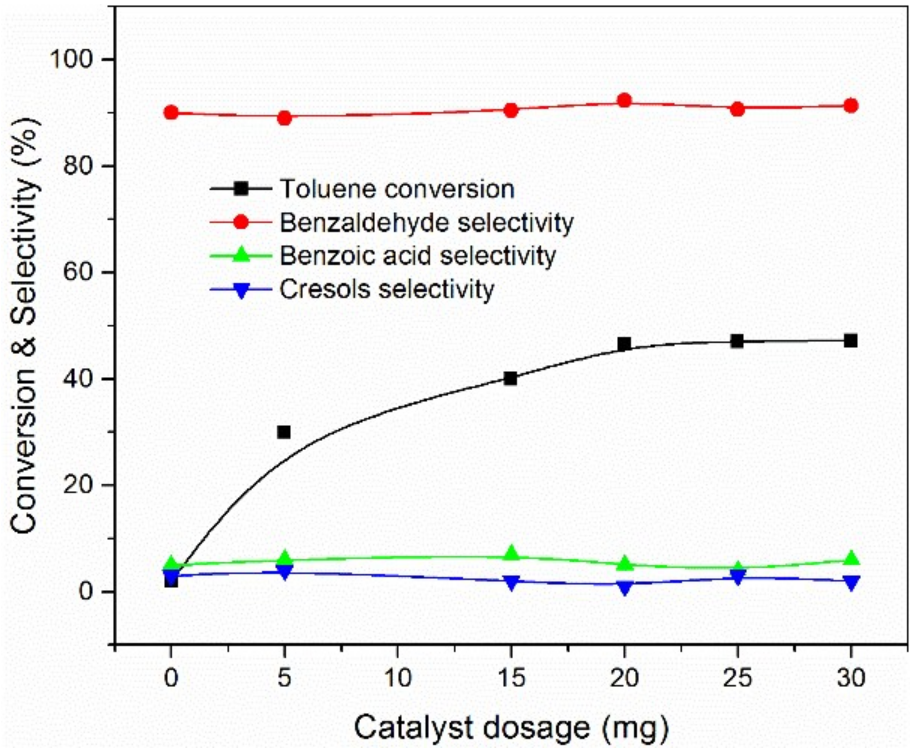

Fig. S2 Effect of catalyst amount on toluene oxidation. Reaction conditions: acetonitrile (5 ml), toluene (2.5 mmol), H_2O_2 (10 mmol), 75 °C, 5 h.

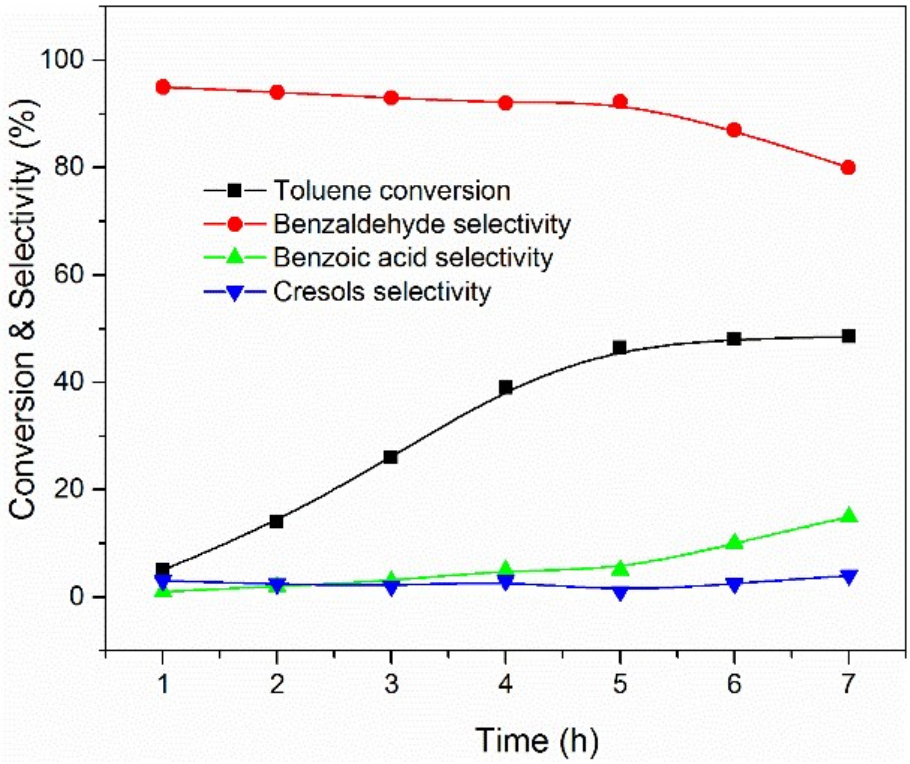

Fig. S3 Effect of reaction time on toluene oxidation. Reaction conditions: acetonitrile (5 ml), toluene (2.5 mmol), H_2O_2 (10 mmol), catalyst (20 mg), 75 °C.

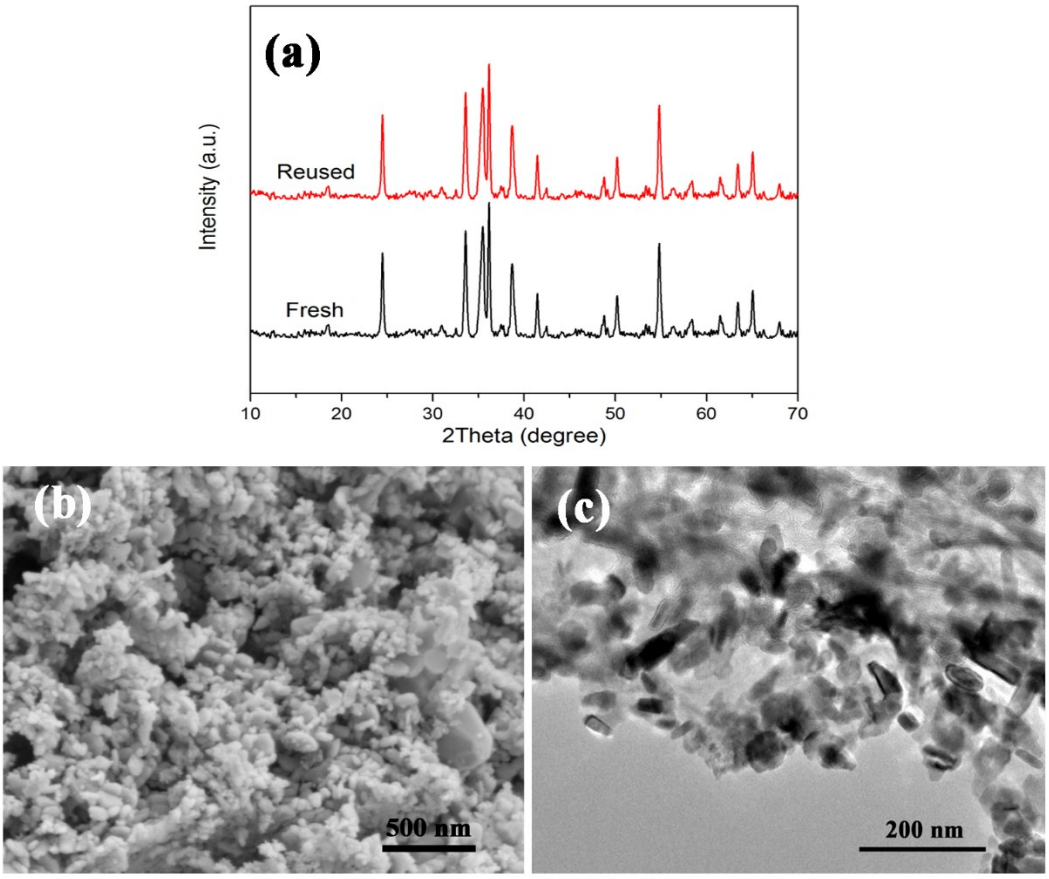

Fig. S4 (a) XRD patterns of the fresh and reused $CuCr_2$/CN catalyst after six catalytic cycles, (b) FESEM image and (c) TEM image of the reused $CuCr_2$/CN catalyst.

Table S1 The Cu/Cr molar ratios of the prepared Cu-Cr bimetallic catalysts.

Entry	Sample	Cu/Cr (nominal)	Cu/Cr (obtained by XPS)
1	$CuCr_2$/CN	0.50	0.49
2	CuCr/CN	1.00	1.00
3	Cu_2Cr/CN	2.00	2.02